

agreements, minimum instream flow rights, irrigation rights, and federal reserved water rights. Instream flows for water-related resource attributes, including native fish, are currently being discussed by the National Park Service, the State of Utah, and the Washington County Water Conservancy District. These discussions are part of ongoing negotiations to determine Federal reserved water rights for Zion National Park in the Virgin River adjudication.

#### ***Enhance and Maintain Habitat***

Habitat enhancement procedures will be implemented in approximately 26 km (16 mi) of occupied habitat. Enhancement projects will focus on specific factors that contribute to Virgin spinedace habitat degradation including: agricultural activities, mining activities, recreational use of riparian zones, and activities that affect water quality (Table 4). Enhancement projects will include maintenance and construction of boundary-line fences between federal and private parcels to control unauthorized grazing and recreational (ie: ORV, hiking, etc.) use along the riparian zones, establishment of intensive grazing management programs for federal lands along streams, and development of barriers and conservation easements within the Virgin River floodplain to reduce additional agricultural, recreational, and developmental impacts. Any future projects which alter habitat will be evaluated as described in the mitigation section of this strategy.

#### ***Selectively Control Non-indigenous Fish***

Non-indigenous fish populations identified in Table 2 will be evaluated in order to identify detrimental effects on Virgin spinedace populations. Management and control of non-indigenous fish will focus on implementation of stocking and introduction procedures as well as control and/or eradication of selected populations of these fish in the Virgin River basin. Specific management actions will be developed on a reach-by-reach basis to remove the threats to Virgin spinedace associated with non-indigenous species. Table 4 summarizes reaches where non-indigenous fish management actions will be implemented.

#### **Control Fish Stocking and Introductions**

The following basin-wide procedures for controlling stocking, introduction, and spread of non-indigenous aquatic species of vertebrates and invertebrates will be implemented by the appropriate agencies. These procedures have been developed using adapted versions of The American Fisheries Society procedures for nonnative fish introductions.